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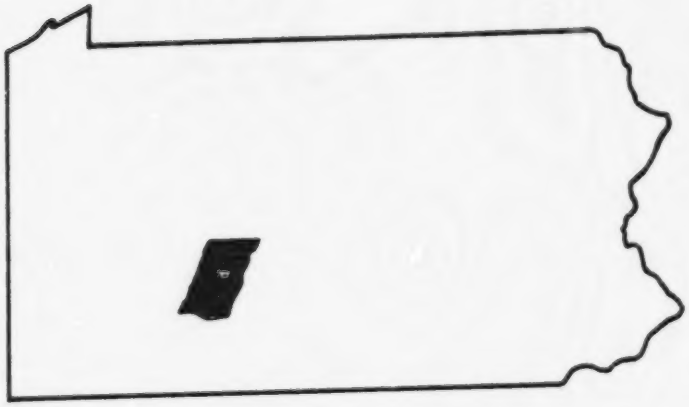
FLOOD INSURANCE STUDY

ORIGINAL

TOWNSHIP OF STONYCREEK, PENNSYLVANIA
CAMBRIA COUNTY



APRIL 15, 1986

Federal Emergency Management Agency

COMMUNITY NUMBER - 420241

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TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
	1.1 Purpose of Study	1
	1.2 Authority and Acknowledgments	1
	1.3 Coordination	1
2.0	AREA STUDIED	2
	2.1 Scope of Study	2
	2.2 Community Description	2
	2.3 Principal Flood Problems	4
	2.4 Flood Protection Measures	5
3.0	ENGINEERING METHODS	6
	3.1 Hydrologic Analyses	6
	3.2 Hydraulic Analyses	7
4.0	FLOOD PLAIN MANAGEMENT APPLICATIONS	8
	4.1 Flood Boundaries	8
	4.2 Floodways	9
5.0	INSURANCE APPLICATION	11
	5.1 Reach Determinations	11
	5.2 Flood Hazard Factors	12
	5.3 Flood Insurance Zones	12
	5.4 Flood Insurance Rate Map Description	14

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TABLE OF CONTENTS - continued

	Page
6.0 OTHER STUDIES	14
7.0 LOCATION OF DATA	14
8.0 BIBLIOGRAPHY AND REFERENCES	15

FIGURES

Figure 1 - Vicinity Map	3
Figure 2 - Floodway Schematic	11

TABLES

Table 1 - Summary of Discharges	7
Table 2 - Floodway Data	10
Table 3 - Flood Insurance Zone Data	13

EXHIBITS

Exhibit 1 - Flood Profiles
Stony Creek Panels 01P-02P

Exhibit 2 - Flood Boundary and Floodway Map Index
Flood Boundary and Floodway Map

PUBLISHED SEPARATELY:

Flood Insurance Rate Map Index
Flood Insurance Rate Map

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FLOOD INSURANCE STUDY
TOWNSHIP OF STONYCREEK, PENNSYLVANIA

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Township of Stonycreek, Cambria County, Pennsylvania, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in their efforts to promote sound flood plain management. Minimum flood plain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, flood plain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study represent a revision of the original analyses by the U. S. Army Corps of Engineers (COE) for the Federal Emergency Management Agency (FEMA), under Inter-Agency Agreement Nos. IAA-H-19-74 and IAA-H-16-75, Project Order Nos. 17 and 6, respectively. The updated version was also prepared by the COE, under Inter-Agency Agreement No. IAA-H-9-79, Project Order No. 40, and Amendment No. 1. This work was completed in August 1981.

1.3 Coordination

On January 18, 1979, the scope of the study was discussed at an initial Consultation and Coordination Officer's (CCO) meeting attended by representatives of FEMA, the Township of Stonycreek, and the COE (the study contractor). Coordination of this study involved Notice of Initiation of Study letters and public meetings with township officials. Notice of Initiation of Study letters dated February 28, 1980, announced

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the beginning of the study and requested assistance in compiling elevation reference marks, data relating to subsidence, historic flood data, topographic and planimetric mapping, aerial photography, economic and engineering studies, and land-use plans. Letters were sent to all federal, state, county, and local government agencies that could possibly make input to the study.

On July 21, 1982, the results of the study were reviewed at a final CCO meeting held with representatives of FEMA, the township, and the COE.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the incorporated area of the Township of Stonycreek, Cambria County, Pennsylvania. The area of study is shown on the Vicinity Map (Figure 1).

Stony Creek was studied by detailed methods for its entire length within the corporate limits. The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development and proposed construction.

It was originally determined at the initial CCO meeting that Solomon Run would be studied by detailed methods. There is a flood control project currently being planned on Solomon Run, which will cause the stream characteristics to continually change. For the purposes of this Flood Insurance Study and due to the uncertainty of the flood control project, it was decided to study Solomon Run by approximate methods. Falls Run and Sams Run were also studied by approximate methods; however, negligible flood hazards were determined for these streams and no flood boundaries were shown for them. Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and the Township of Stonycreek.

2.2 Community Description

The Township of Stonycreek is located in the southwestern corner of Cambria County in south-central Pennsylvania, approximately 70 miles east of the City of Pittsburgh and 30 miles southwest of the City of Altoona. The township is situated in a narrow, deep valley covering 3.4 square miles. It is bordered by the City of Johnstown, the Borough of Lorain, and the Township of Conemaugh to the north, the Borough of Geistown to the east, the Townships of Conemaugh and Richland to the south, and the

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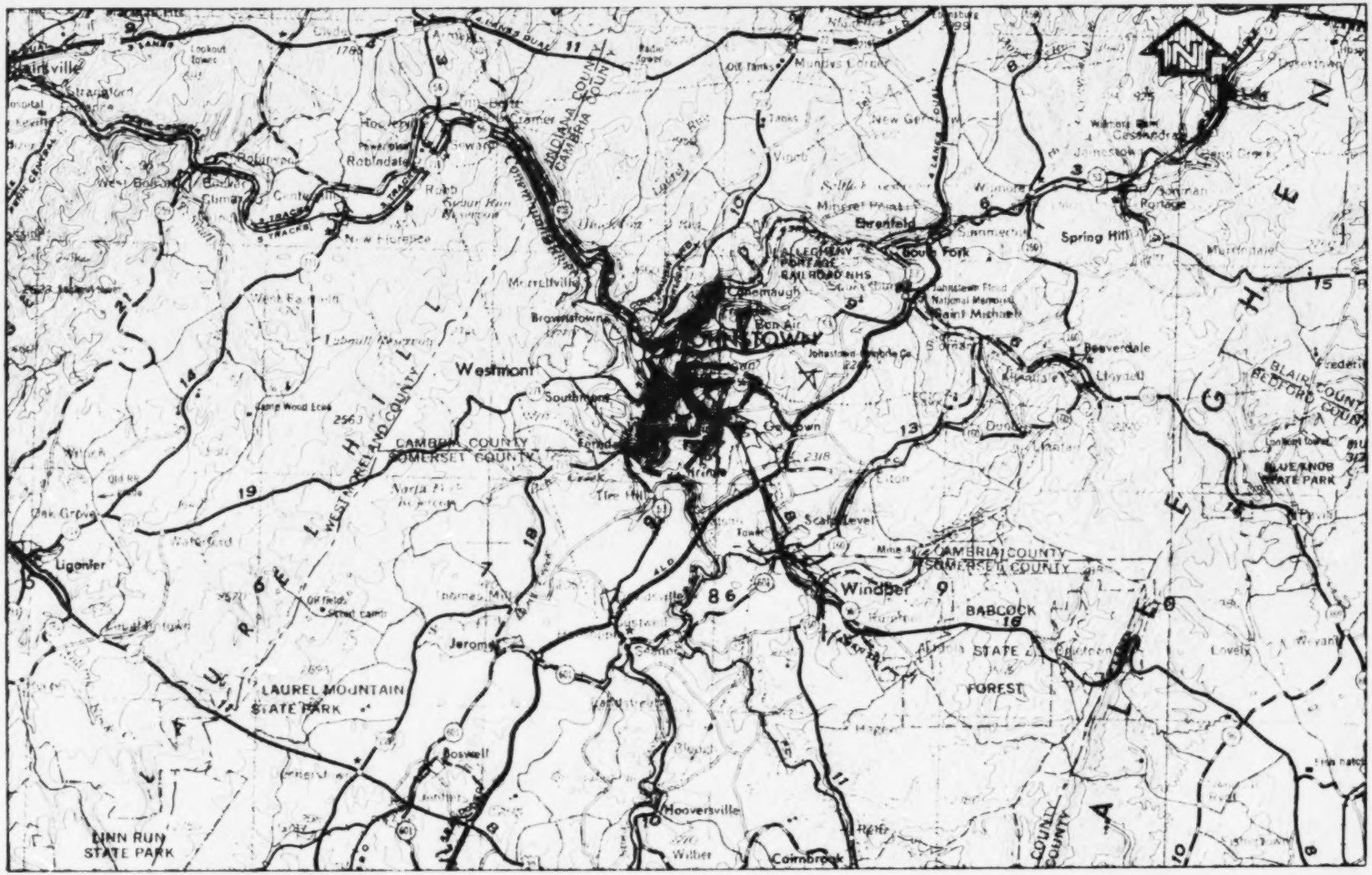
Johnstown
Westmont
Southmont
Ebensburg
Spring Hill
Beaverdale
Windber
BABCOCK STATE FOREST
Ligonier
Jerome
LAUREL MOUNTAIN STATE PARK
LINN RUN STATE PARK
Boswell
Hooversville
Seanor
Scalp Level
BLUE KNOB STATE PARK
CAMBRIA COUNTY
SOMERSET COUNTY
WESTMORELAND COUNTY
INDIANA COUNTY
BLAIR COUNTY
BEDFORD COUNTY
ALLEGHENY PORTAGE RAILROAD NHS
Johnstown Flood National Memorial
Saint Michael
Conemaugh
Coopers Rock
Robindale
Claridge
Derry
Latrobe
Unity
Mount Pleasant
Somerset
Berlin
Meyersdale
Confluence
Farmington
Ohiopyle
Connellsville
Uniontown
Brownsville
Waynesburg
Cassandra
Jamestown
Portage
Summerhill
Lovelx
Cairnbrook
Wilmer
Dunlo
Davidsville
Paint
Shade Gap
Fort Littleton
Mercersburg
Chambersburg
Gettysburg
Carlisle
Harrisburg
Lancaster
Reading
Pottsville
Hazleton
Wilkes-Barre
Scranton
Allentown
Bethlehem
Easton
Philadelphia
Trenton
Camden
Wilmington
Dover
Baltimore
Annapolis
Washington
Alexandria
Arlington
Fredericksburg
Richmond
Norfolk
Virginia Beach
Roanoke
Lynchburg
Charlottesville
Harrisonburg
Winchester
Front Royal
Martinsburg
Hagerstown
Frederick
Rockville
Silver Spring
Bethesda
Chevy Chase
Takoma Park
Hyattsville
College Park
Greenbelt
Laurel
Bowie
Upper Marlboro
Clinton
Fort Washington
Oxon Hill
Alexandria
Arlington
Falls Church
Fairfax
Vienna
Herndon
Reston
Chantilly
Centreville
Manassas
Woodbridge
Dumfries
Quantico
Stafford
Fredericksburg
Spotsylvania
Chancellorsville
Wilderness
Orange
Culpeper
Warrenton
Middleburg
Leesburg
Purcellville
Round Hill
Hamilton
Waterford
Lovettsville
Brunswick
Harpers Ferry
Charles Town
Shepherdstown
Martinsburg
Inwood
Berkeley Springs
Paw Paw
Great Cacapon
Hancock
Cumberland
Frostburg
Oakland
Deep Creek Lake
Grantsville
Accident
Friendsville
Kingwood
Terra Alta
Rowlesburg
Parsons
Davis
Thomas
Canaan Valley
Blackwater Falls
Elkins
Beverly
Philippi
Buckhannon
Weston
Glenville
Sutton
Flatwoods
Gassaway
Clay
Summersville
Richwood
Cowen
Webster Springs
Diana
Hacker Valley
Holly River
Burnsville
Gilmer

Borough of Ferndale and the Township of Upper Yoder to the west. According to the U. S. Bureau of the Census, Stonycreek had a population of 4,543 in 1970, a 2.3-percent decrease from the 1960 population of 4,650 (Reference 1).

Stony Creek, with a total drainage area of 467 square miles at its confluence, has its source in the Allegheny Mountains in southwestern Pennsylvania. The river flows north approximately 43.5 miles through Somerset and Cambria Counties to the "Point" in Johnstown. The "Point" is the name of the area of the confluence of Stony Creek and the Little Conemaugh River. The average bed slope of Stony Creek within the study area is 14 feet per mile. Local relief above the stream valley varies from 1,100 feet to 1,900 feet.

Solomon Run has a total drainage area of 8.5 square miles at its confluence and has its source just west of Johnstown. The stream flows west for approximately 5.1 miles.

The flood plain of Stony Creek consists of dense urban blends of residential, commercial, and light-heavy industrial development, with limited potential for expansion. The Solomon Run flood plain consists mainly of residential development.

The climate of Stonycreek is temperate with a seasonal variation in temperature. The area is geographically located in a region of variable air mass activity, being subject to both polar and tropical continental and maritime air mass invasion. The weather is usually moderate but can have frequent and rapid changes resulting from the passage of fronts. Measurable precipitation occurs about 92 days per year and averages 45 inches annually. Temperatures range from an average of 31 degrees Fahrenheit (°F) in January to an average of 73°F in July (Reference 2).

2.3 Principal Flood Problems

The main flood season for Stony Creek and Solomon Run is generally December through April. Most of the floods that occur during this period are the result of heavy rain and snowmelt. However, large floods can occur in the study area at any time of the year. This area is also subject to intense thundershowers and heavy rainfall from tropical storms from June through October. Solomon Run is more likely to be flooded during these intense, local summer storms.

The area along Stony Creek at Ferndale-Riverside has been flooded in the past and will be vulnerable to flooding in the future. The most recent major flood occurred in July 1977 and had a discharge of 48,000 cubic feet per second (cfs) at the U. S. Geological Survey (USGS) gaging station (No. 400) at Ferndale (Reference 3). The following tabulation shows major floods of record on Stony Creek as recorded at the USGS gage:

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Date	Stage (Feet)	Elevation (Feet)	Discharge cfs	Recurrence[2] Interval (Years)
March 18, 1936	22.0	1,206.1	59,000	200
July 20, 1977	23.1	1,207.2[1]	48,000	65
October 15, 1954	16.2	1,200.9	34,800	20
April 26, 1937	17.5	1,201.6	24,500	9
March 31, 1940	13.3	1,197.4	23,900	7

Gage Zero Elevation = 1,184.20 feet
[1]Some plugging reported
[2]Based on stage frequency

Prior to July 1977, Solomon Run had caused only localized flood damage with a persistent streambank erosion problem at certain locations. On July 20, 1977, flow from Solomon Run raged with volume and velocity too great to be contained within its banks. Homes were swept from their foundations, and automobiles were washed downstream. Bridges and culverts became clogged with debris and, in certain locations, the entire channel width filled with debris and sediment. Following the path of least resistance, the floodwaters spread debris into low-lying areas. A number of lives were lost along Solomon Run, and physical property damage, both public and private, was great.

2.4 Flood Protection Measures

Presently, the township has no flood protection measures on Stony Creek. A flood protection project, involving channel modifications to Stony Creek, was completed in Johnstown by the U. S. Army Corps of Engineers (COE) in 1943. To a limited degree, the effect of the channel improvements extends to the Ferndale area, which borders Stonycreek to the southwest.

In May 1972, the Pittsburgh District of the COE completed a feasibility study of extending the existing channel improvements to protect upstream communities along Stony Creek. It was concluded that remedial structural measures to alleviate the flood problem upstream of the existing channel improvements could not be economically justified.

Accordingly, it was recommended that local governments implement a sound flood plain management program upon completion of a Flood Plain Information report. The COE completed the report in 1974 and presented it to Johnstown and surrounding communities in June 1975 (Reference 4).

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A flood protection project for Solomon Run is currently under construction by the Pennsylvania Department of Environmental Resources. Since the beginning of this study, stream characteristics have continually changed due to this construction and work being completed by the Federal Disaster and Assistance Administration as a result of the July 1977 flood. Completion of the project, originally scheduled for mid-1982, is now scheduled by 1989. The project covers approximately 11,500 linear feet of stream and is divided into three units. Unit III is located upstream of the Borough of Dale through the upper portion of Johnstown and into Stonycreek. The project is designed to adequately carry a discharge of 4,500 cfs with added freeboard. The COE analysis determined that the channel will contain both the 100-year and 500-year floods within the channel banks when the project is completed.

3.0 ENGINEERING METHODS

For the flooding source studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for flood plain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for the flooding source studied in detail affecting the community.

For Stony Creek, flood-flow frequency data were based on a statistical analysis of stage and discharge records at the USGS gage at Ferndale (Reference 3). The gage has been in operation since October 1913, except for the period from March 1936 to October 1938. The analysis covered 40

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years of continuous records and 4 years, extending back to 1936, of flows estimated from nearby stations, for a total of 44 years. This period of record was used to be consistent with gaging station records at Seward on the Conemaugh River and at East Conemaugh on the Little Conemaugh River (Reference 5). Originally the gage at Ferndale was non-recording and was located at a different site. It has been at its present location since March 1936 and was converted to a recording gage on January 30, 1940. The gage elevation is 1,184.20 feet, and the drainage area at the gage is 451 square miles. The analysis followed the standard log-Pearson Type III method as outlined by the Water Resources Council (Reference 6).

A summary of drainage area-peak discharge relationships for Stony Creek is shown in Table 1, "Summary of Discharges."

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (sq. miles)	PEAK DISCHARGES (cfs) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
STONY CREEK					
At the downstream corporate limits	452	26,000	47,500	60,000	100,000

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross sections were obtained from topographic maps and recent field surveys (References 7 and 8). All bridges and culverts were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Water-surface elevations of floods of the selected recurrence intervals were computed using the COE 22-J2-L212 computer program and the COE HEC-2 step-backwater computer program (References 9 and 10). Flood profiles were drawn showing computed water-surface elevations for floods of the selected recurrence intervals.

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Starting water-surface elevations for Stony Creek were obtained from the Flood Insurance Study for the City of Johnstown (Reference 11). The elevations for Johnstown were developed from a rating curve at the confluence of Stony Creek and the Little Conemaugh River. The rating curve was developed from the Conemaugh River profiles for the corresponding frequency floods at the "Point".

Channel roughness factors (Manning's "n") used in the hydraulic computations were established through the successful reproduction of the October 1954, June 1972, July 1977, and September-October 1973 profiles of floods on Stony Creek. The channel "n" values for Stony Creek ranged from 0.030 to 0.060, and the overbank "n" values ranged from 0.060 to 0.070.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For the stream studied by approximate methods, the extent of 100-year flooding was determined by field investigations and interviews with local residents.

4.0 FLOOD PLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages State and local governments to adopt sound flood plain management programs. Therefore, each Flood Insurance Study produces maps designed to assist communities in developing flood plain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for flood plain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For the stream studied in detail, the 100- and 500-year flood plain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps (Reference 12).

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For the stream studied by approximate methods, the boundary of the 100-year flood was delineated using the topographic maps referenced above.

The 100- and 500-year flood plain boundaries are shown on the Flood Boundary and Floodway Map (Exhibit 2). In cases where the 100- and 500-year flood plain boundaries are close together, only the 100-year flood plain boundary has been shown. Small areas within the flood plain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

4.2 Floodways

Encroachment on flood plains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of flood plain management involves balancing the economic gain from flood plain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of flood plain management. Under this concept, the area of the 100-year flood plain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodway in this study is presented to local agencies as a minimum standard that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this study was computed on the basis of equal conveyance reduction from each side of the flood plain. The results of these computations are tabulated at selected cross sections for the stream segment for which a floodway is computed (Table 2).

As shown on the Flood Boundary and Floodway Map (Exhibit 2), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 100-year flood plain boundaries are either close together or collinear, only the floodway boundary has been shown. Portions of the floodway widths for Stony Creek extend beyond the corporate limits.

The area between the floodway and 100-year flood plain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the flood plain that could be completely obstructed without increasing

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FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH[2] (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NGVD)			
Stony Creek								
A	24,499	312	5,674	10.6	1,199.5	1,199.5	1,200.5	1.0
B	27,878	194	3,759	16.0	1,204.1	1,204.1	1,204.4	0.3
C	29,462	465	7,341	8.2	1,210.4	1,210.4	1,211.0	0.6
D	32,208	860	11,321	5.3	1,214.1	1,214.1	1,215.0	0.9
E	36,300	260	4,185	14.3	1,229.6	1,229.6	1,230.4	0.8
F	38,425	559	7,257	8.3	1,238.0	1,238.0	1,238.7	0.7

[1]Feet above confluence with Conemaugh and Little Conemaugh Rivers
[2]This width extends beyond corporate limits

TABLE 2

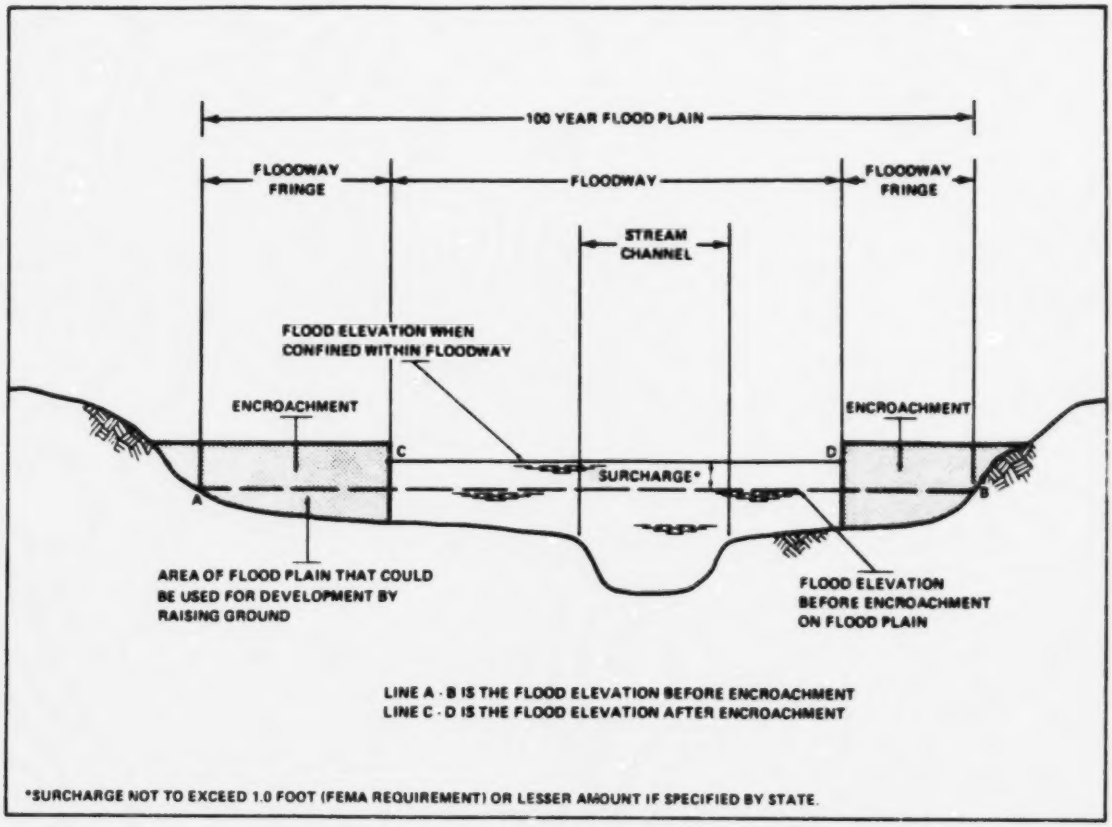
FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF STONY CREEK, PA
(CAMBRIA CO.)

FLOODWAY DATA

10 **STONY CREEK**

the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to flood plain development are shown in Figure 2.


100 YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE A - B IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE C - D IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

FLOODWAY SCHEMATIC

Figure 2

5.0 INSURANCE APPLICATION

To establish actuarial insurance rates, data from the engineering study must be transformed into flood insurance criteria. This process includes the determination of reaches, Flood Hazard Factors, and flood insurance zone designations for the flooding source studied in detail in the Township of Stonycreek.

5.1 Reach Determinations

Reaches are defined as sections of flood plain that have relatively the same flood hazard, based on the average weighted difference in water-

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surface elevations between the 10- and 100-year floods. This difference may not have a variation greater than that indicated in the following tabulation for more than 20 percent of the reach:

Average Difference Between 10- and 100-Year Floods	Variation
Less than 2 feet	0.5 foot
2 to 7 feet	1.0 foot
7.1 to 12 feet	2.0 feet
More than 12 feet	3.0 feet

The locations of the reaches determined for the flooding source of the Township of Stonycreek are shown on the Flood Profiles (Exhibit 1) and summarized in Table 3.

5.2 Flood Hazard Factors

The Flood Hazard Factor (FHF) is used to establish relationships between depth and frequency of flooding in any reach. This relationship is then used with depth-damage relationships for various classes of structures to establish actuarial insurance rate tables.

The FHF for a reach is the average weighted difference between the 10- and 100-year flood water-surface elevations rounded to the nearest one-half foot, multiplied by 10, and shown as a three-digit code. For example, if the difference between water-surface elevations of the 10- and 100-year floods is 0.7 foot, the FHF is 005; if the difference is 1.4 feet, the FHF is 015; if the difference is 5.0 feet, the FHF is 050. When the difference between the 10- and 100-year flood water-surface elevations is greater than 10.0 feet, it is rounded to the nearest whole foot.

5.3 Flood Insurance Zones

Flood insurance zones and zone numbers are assigned based on the type of flood hazard and the FHF, respectively. A unique zone number is associated with each possible FHF, and varies from 1 for a FHF of 005 to a maximum of 30 for a FHF of 200 or greater.

Zone A: Special Flood Hazard Areas inundated by the 100-year flood, determined by approximate methods; no base flood elevations shown or FHFs determined.

Zones A10 and A18: Special Flood Hazard Areas inundated by the 100-year flood, determined by detailed methods; base flood elevations shown, and zones subdivided according to FHF.

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FLOODING SOURCE	PANEL[1]	ELEVATION DIFFERENCE[2] BETWEEN 1.0% (100-YEAR) FLOOD AND			FHF	ZONE	BASE FLOOD ELEVATION[3] (NGVD)
		10% (10 YR.)	2% (50 YR.)	0.2% (500 YR.)			
Stony Creek							
Reach 1	01	-8.8	-3.3	+7.0	090	A18	Varies
Reach 2	01	-5.1	-1.7	+4.6	050	A10	Varies

[1]Flood Insurance Rate Map Panel
[2]Weighted Average
[3]Rounded to the nearest foot - see map

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF STONY CREEK, PA
(CAMBRIA CO.)

FLOOD INSURANCE ZONE DATA

STONY CREEK

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Zone B: Areas between the Special Flood Hazard Area and the limits of the 500-year flood, including areas of the 500-year flood plain that are protected from the 100-year flood by dike, levee, or other water control structure; also, areas subject to certain types of 100-year shallow flooding where depths are less than 1.0 foot; and areas subject to 100-year flooding from sources with drainage areas less than 1 square mile. Zone B is not subdivided.

Zone C: Areas of minimal flooding.

Flood elevation differences, FHFs, flood insurance zones, and base flood elevations for the flooding source studied in detail in the community are shown in Table 3.

5.4 Flood Insurance Rate Map Description

The Flood Insurance Rate Map for the Township of Stonycreek is, for insurance purposes, the principal result of the Flood Insurance Study. This map contains the official delineation of flood insurance zones and base flood elevations. Base flood elevation lines show the locations of the expected whole-foot water-surface elevation of the base (100-year) flood. The base flood elevations and zone numbers are used by insurance agents, in conjunction with structure elevations and characteristics, to assign actuarial insurance rates to structures and contents insured under the National Flood Insurance Program.

6.0 OTHER STUDIES

The Flood Insurance Study for the City of Johnstown has been published (Reference 11). The results of this study are in exact agreement with the results of that study. A previous Flood Insurance Study for the Township of Stonycreek has also been published (Reference 13). The results of this study supersede the results of that study.

The Pittsburgh District of the COE published a Flood Plain Information report concerning flooding on the Conemaugh River, the Little Conemaugh River, and Stony Creek within Cambria and Somerset Counties. The results of this study will be in general agreement with that report (Reference 4).

7.0 LOCATION OF DATA

Information concerning the pertinent data used in preparation of this study can be obtained by contacting the Natural and Technological Hazards Division,

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Federal Emergency Management Agency, Regional Director, Region III Office, Liberty Square Building (Second Floor), 105 South Seventh Street, Philadelphia, Pennsylvania 19106.

8.0 BIBLIOGRAPHY AND REFERENCES

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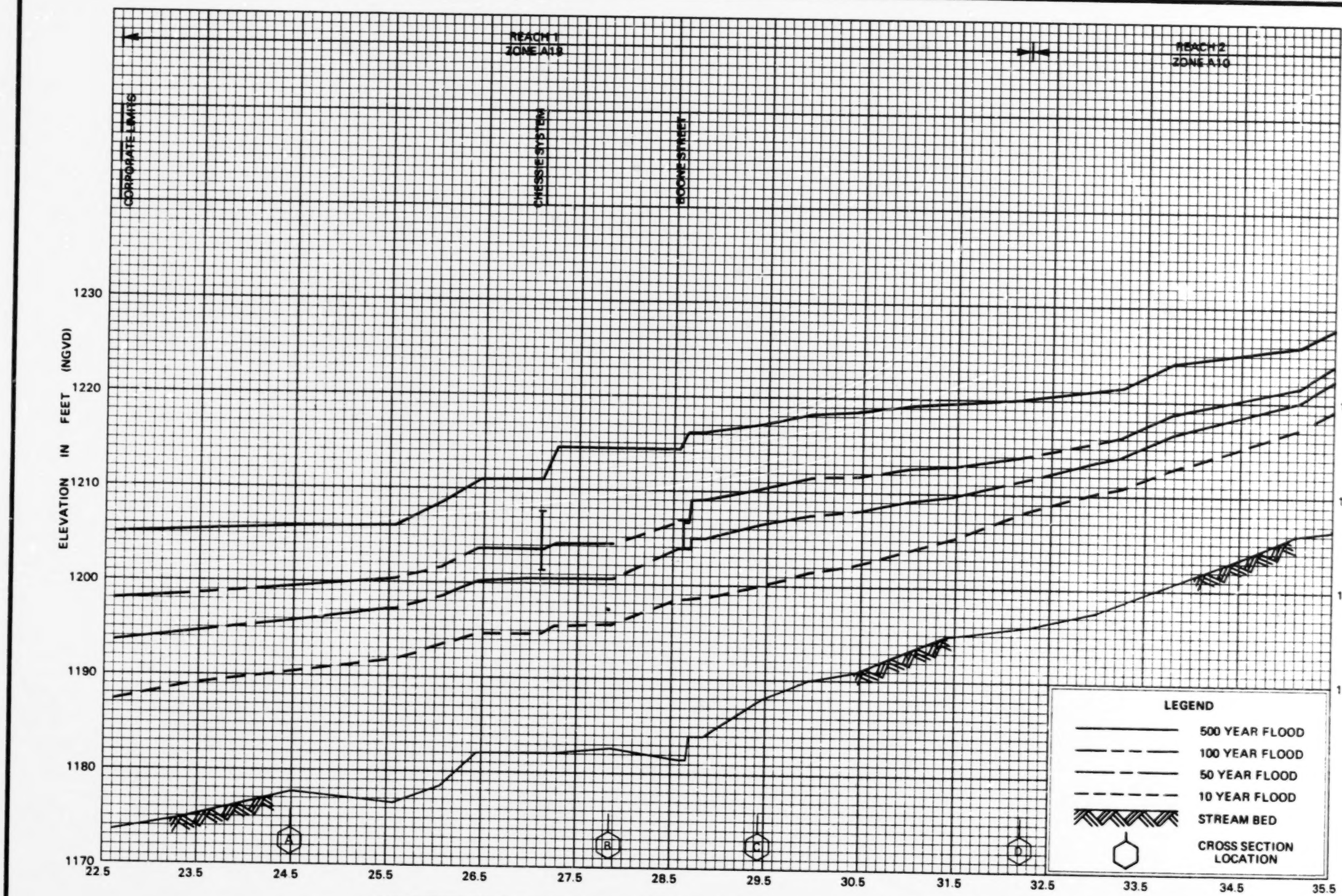

FLOOD PROFILES

STONY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

TOWNSHIP OF STONY CREEK, PA
(CAMBRIA CO.)

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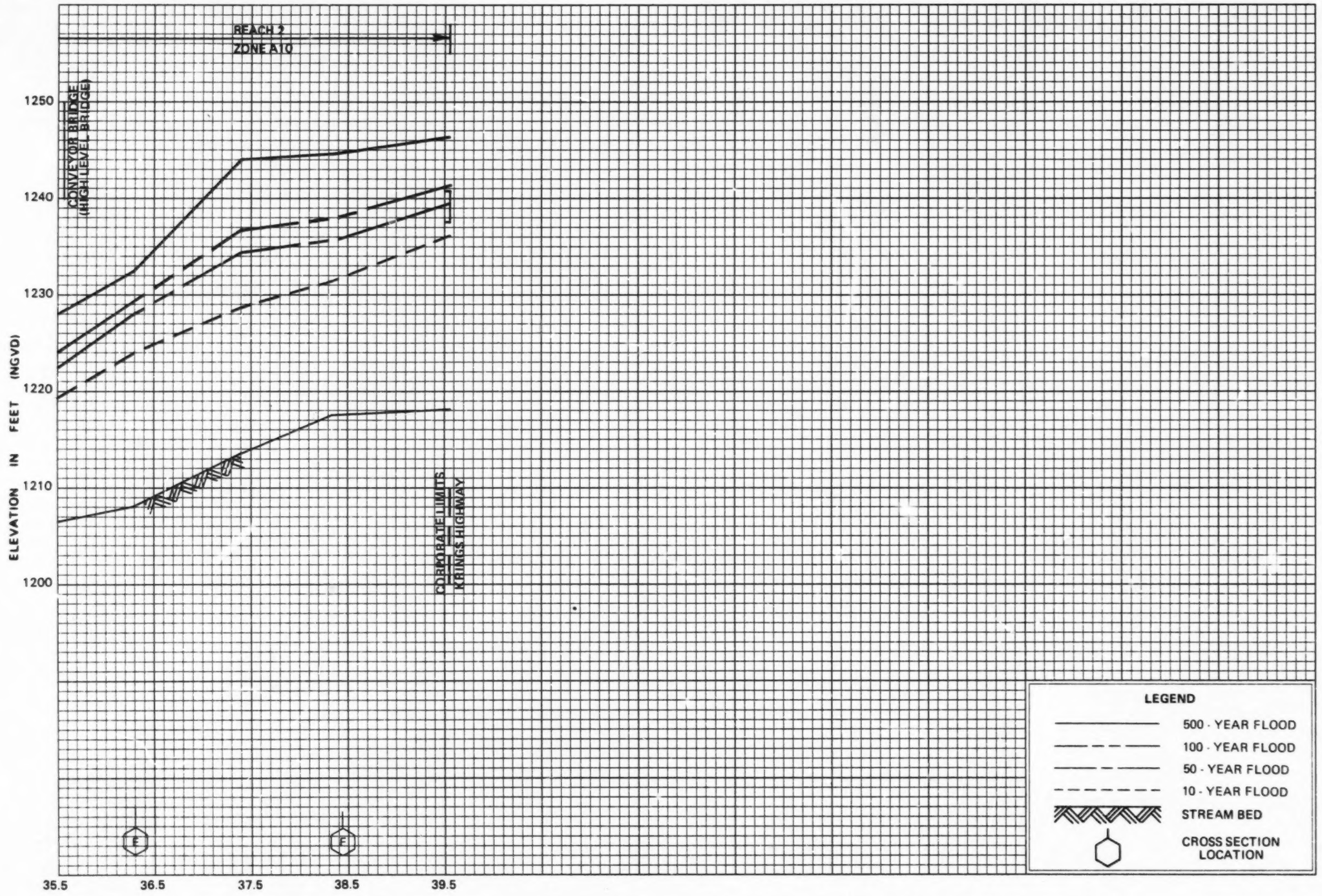

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